Massachusetts Department of Environmental Protection
Source Water Assessment and Protection (SWAP) Report
for

South Deerfield Water Supply District

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- inventory land uses within the recharge areas of all public water supply sources;
- assess the susceptibility of drinking water sources to contamination from these land uses; and
- publicize the results to provide support for improved protection.

Susceptibility and Water Quality

Susceptibility is a measure of a water supply's potential to become contaminated due to land uses and activities within its recharge area.

A source's susceptibility to contamination does *not* imply poor water quality.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, disinfecting, filtering, or treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Actual water quality is best reflected by the results of regular water tests. To learn more about your water quality, refer to your water supplier's annual Consumer Confidence Reports.

Table 1: Public Water System Information

PWS Name	South Deerfield Water Supply District
PWS Address	P.O. Box 51
City/Town	Deerfield
PWS ID Number	1074001
Local Contact	Mr. Roger Sadoski
Phone Number	413-665-3540

Introduction

We are all concerned about the quality of the water we drink. Drinking water sources may be threatened by many potential contaminant sources, including stormwater runoff, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures.

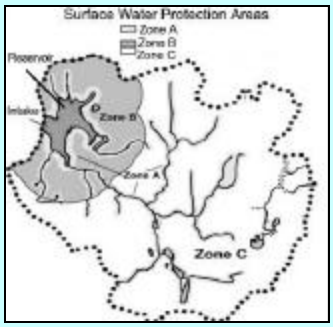
Refer to Table 3 for Recommendations to address potential sources of contamination. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes the following sections:

1. Description of the Water System
2. Land Uses within Protection Areas
3. Source Water Protection
4. Appendices

What is a Watershed?

A watershed is the land area that catches and drains rainwater down-slope into a river, lake or reservoir. As water travels down from the watershed area it may carry contaminants from the watershed to the drinking water supply source. For protection purposes, watersheds are divided into protection Zones A, B and C.



Glossary
Protection Zones

Zone A: is the most critical for protection efforts. It is the area 400 feet from the edge of the reservoir and 200 feet from the edge of the tributaries (rivers and/or streams) draining into it.

Zone B: is the area one-half mile from the edge of the reservoir but does not go beyond the outer edge of the watershed.

Zone C: is the remaining area in the watershed not designated as Zones A or B.

The attached map shows Zone A and your watershed boundary.

Section 1: Description of the Water System

System Susceptibility: *Moderate*

Source Name	***Source ID***	***Susceptibility***
Whately Glen Reservoir	1074001-01S	Moderate
Conway Reservoir	1074001-02S	Moderate

Deerfield is a small rural, agricultural and developing residential community located in northwestern Massachusetts along the Connecticut River valley. Deerfield is home to at least three private schools, Historic Deerfield and craft fairs. Light industry has recently expanded into the community. Deerfield's topography is primarily fertile valley in the center of town with north-south trending hills on the east and west sides of town. The Pocumtuck Range trends north-south along the eastern side of town and the Berkshire foothills begin along the west side of town. The Deerfield River flows through the northern portions of town. The Deerfield River flows northwest to southeast through the foothills until it enters the river valley, where it flows north then east to its confluence with the Connecticut River. The Connecticut River flows south and forms the eastern boundary of Deerfield.

Deerfield is served by two water districts: Deerfield Fire District and South Deerfield Water Supply District. The South Deerfield Water Supply District serves the southern section of town. The District maintains two reservoirs, Whately Glen Reservoir 01S and Conway Reservoir 02S, and the Sugarloaf Wellfield, a tubular wellfield 01G that is designated as an emergency source. The groundwater utilized in the Sugarloaf Wellfield was contaminated with EDB used on adjacent tobacco fields and the source has been off-line since 1984. The emergency source will not be discussed further in this report.

The Conway Reservoir, the main storage reservoir, is located in Conway. Water flows from the Conway Reservoir into the distribution reservoir, the Whately Glen Reservoir, a small distribution reservoir located in Whately, immediately downgradient of the Conway Reservoir. The watershed for the consecutive reservoirs is located in the foothills of the Berkshires on the eastern side of the Berkshire Massif. The topography of the watershed consists primarily of steeply sloping brook valleys and rolling hills. The overburden material within the watershed is predominantly a thin cover of glacial till, often referred to as hard pan, with significant areas of exposed bedrock. Some of the brook valleys have limited deposits of glacial, stratified drift (sand and gravel) or recent alluvium which are locally mined. The bedrock in the watershed is mapped as several formations consisting of metamorphic rocks and igneous intrusive rocks of the Conway Formation, predominantly schist and marble and the Williamsburg Granodiorite. The structural geology of the region is highly complex with several stages of folding resulting in a corrugated effect in the Conway Formation with faults along the valley wall.

The South Deerfield Water Supply District (District) owns approximately 910 acres (26%) of the watershed; an additional 21% of the remaining watershed is held in Chapter 61 tax status as agriculture/forest land or is state forest. Land use within the Conway/Whately Glen Reservoir watershed is primarily forested

upland (90%) with the remaining watershed consisting of residential and agricultural activities (both commercial and non-commercial) such as hayfields, pasture and forestry; a small percentage of land is utilized as commercial and transportation related land use. Please refer to the attached map to view the boundaries of the protective areas.

Water from the reservoirs is treated through a rapid sand filtration system, then chlorinated for disinfection and pH adjusted with soda ash for corrosion control. For current information on water quality monitoring results and treatment processes, please refer questions for a copy of the most recent Consumer Confidence Report.

Section 2: Land Uses in the Protection Areas

There are few activities that pose significant anthropogenic threats to the reservoirs. However, due to the nature of surface water supplies the sources are considered highly vulnerable to potential contamination threats through land use. Land uses and activities that are considered potential sources of contamination are listed in Table 2.

Key Land Uses and Protection Issues include:

1. Activities in Zone A
2. Residential land use
3. Transportation corridors
4. Agriculture/Forestry
5. Protection planning

The overall ranking of susceptibility to contamination for the system is moderate, based on the presence of at several moderate threat land uses within the water supply protection areas, as seen in Table 2. The active agriculture identified in the source protection map is primarily hay and pasture lands and portions of a dairy farm. Although manure spreading on fields had been conducted periodically in the past, reportedly it is not a current practice. Changing use on agricultural land should be monitored frequently by the water to ensure current knowledge.

Benefits of Source Protection

Source Protection helps protect public health and is also good for fiscal fitness:

- Protects drinking water quality at the source
- Reduces monitoring costs through the DEP Waiver Program
- Treatment can be reduced or avoided entirely, saving treatment costs
- Prevents costly contamination clean-up
- Preventing contamination saves costs on water purchases, and expensive new source development

Contact your regional DEP office for more information on Source Protection and the Waiver Program.

1. Activities in Zone A - The Zone A for a reservoir includes all areas within 400 feet of the reservoir shoreline and within 200 feet of either side of all streams and feeder ponds that flow into the reservoir. The Zone A is the area closest to the reservoir and its tributaries. Therefore land uses within the Zone A are of particular concern. Activities that could potentially threaten water quality if improperly managed are restricted by 310 CMR 22.20B. Activities that store, use, or dispose of hazardous materials can be potential sources of contamination if improperly managed. Wild animals, farm animals and domestic pets can be carriers of waterborne diseases such as *Giardia, Cryptosporidium, Salmonella,* etc.

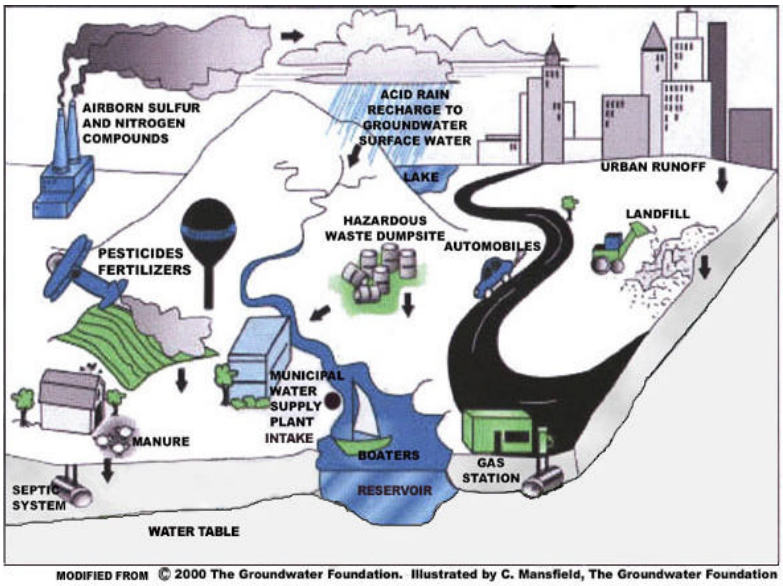


Figure 1: Sample watershed with examples of potential sources of contamination

Overall, the watershed is sparsely populated;

approximately 90% of the watersheds are forested. As noted, the District owns 26% of the watersheds and an additional 21% of the total watershed land has limited protection from development through tax status under Ch. 61 (agriculture/forestry) or is state park land. The following activities occur in the Zone A of the system's reservoirs:

Whately Glen Reservoir (01S) - Activities include a local road and agriculture (hay fields), and a few residential homes (utilizing private septic systems).

Conway Reservoir (02S) - Activities include local roads, hay fields with limited, manure spreading, on portions of a dairy farm and a residence (with private septic systems). According to the water supplier, actual farming activity is very limited within the watershed. For that reason, the dairy farm/manure spreading has been ranked as a moderate as opposed to a high threat. However, if agricultural activity increases within the watershed, the potential impacts to the water supply would increase unless activities are managed appropriately.

Zone A Recommendations:

- ✓ Monitor activities on agriculture land frequently to assess actual potential threats.
- ✓ To the extent possible, remove all prohibited activities within your control from the Zone A to comply with DEP's Zone A requirements.
- ✓ Storage of pesticides, fertilizers or road deicing materials within the Zone A should be covered and contained.
- ✓ To the extent possible, inform landowners within the Zone A regarding the use of BMPs for residential uses and hobby farming.
- ✓ Prohibit all new non-water supply activities from the Zone A on land within your control and provide comment to community boards regarding newly proposed development, as is appropriate.
- ✓ Increase patrols and enforce the no trespassing requirement, as appropriate.
- ✓ Prioritize land to be acquired, especially in the Zone A. Acquiring land and/or acquiring conservation easements is critical to source protection.
- ✓ Investigate erosion and runoff within the watersheds and recommend BMPs as proposed in the project funded through the Source Protection Grant.

- ✓ Agreement Options - Until land is available for acquisition or restriction, attempt to obtain a Memorandum of Understanding and Right of First Refusal.
  - A Memorandum of Understanding (MOU) is an agreement between the landowner and public water supplier in which the landowner agrees not to engage in specific threatening activities. The MOU should be specific to the land use or activity. For example, if the land is residential with a septic system, the owner could agree to not place chemicals, petroleum products, or other hazardous or toxic substances, including septic system cleaners, into the septic system, and agree that the system will be pumped at a specific frequency. As another example, the portions of pasture or hay fields within the Zone A would not have manure spread on them. Understanding how an activity threatens drinking water quality is an important component of developing an effective MOU.

What are "BMPs?"

Best Management Practices (BMPs) are measures that are used to protect and improve surface water and groundwater quality. BMPs can be structural, such as oil & grease trap catch basins, nonstructural, such as hazardous waste collection days or managerial, such as employee training on proper disposal procedures.

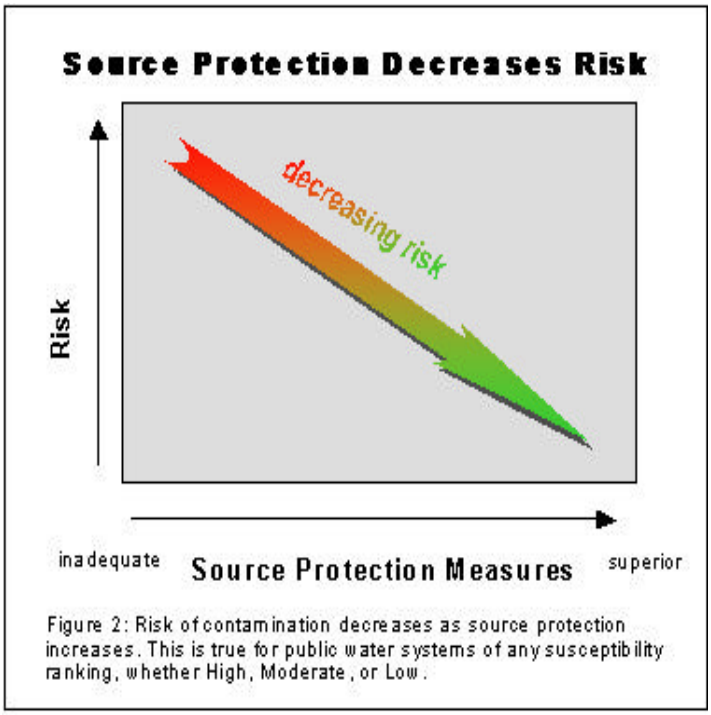


Figure 2: Risk of contamination decreases as source protection increases. This is true for public water systems of any susceptibility ranking, whether High, Moderate, or Low.

Potential Source of Contamination vs. Actual Contamination

The activities listed in Table 2 are those that typically use, produce, or store contaminants of concern, which, if managed improperly, are potential sources of contamination (PSC).

It is important to understand that a release may never occur from the potential source of contamination provided facilities are using best management practices (BMPs). If BMPs are in place, the actual risk may be lower than the threat ranking identified in Table 2. Many potential sources of contamination are regulated at the federal, state and/or local levels, to further reduce the risk.

Table 2: Land Use in the Watersheds

Activities	Quantity	Threat*	Source ID	Potential Source of Contamination
Agricultural				
Dairy Farm (mostly outside of the watershed—marginal operation)	1	M/H	02S	Manure (microbial contaminants, nutrients): improper handling, erosion. Manure spreading is primarily outside of watersheds.
Forestry Operations	Few	M	01S, 02S	Leaks and spills, improper handling of petroleum products in equipment. Erosion.
Hayfields	5	M	01S, 02S	Leaks and spills, improper handling of petroleum products in equipment.
Agriculture—Pesticide/ Fertilizer Storage or Use	Few	M	01S, 02S	Pesticides/fertilizers: leaks, spills, improper handling, or over-application. Petroleum products management for equipment.
Residential				
Fuel oil storage (at residences)	Numerous	M	01S, 02S	Fuel oil household hazardous materials: spills, leaks, or improper handling
Lawn care / Gardening	Numerous	M	01S, 02S	Pesticides: over-application or improper storage and disposal
Septic systems / cesspools	Numerous	M	01S, 02S	Hazardous chemicals, microbial contaminants, and improper disposal
Transportation corridors	Numerous	M	01S, 02S	Petroleum products and transported hazardous materials: accidental leaks or spills; pesticides: over-application or improper handling. Erosion.

Notes:

1. When specific potential contaminants are not known, typical potential contaminants or activities for that type of land use are listed. Facilities within the watershed may not contain all of these potential contaminant sources, may contain other potential contaminant sources, or may use Best Management Practices to prevent contaminants from reaching drinking water supplies.
2. For more information on regulated facilities, refer to Appendix B: Regulated Facilities within the Water Supply Protection Area information about these potential sources of contamination.
3. For information about Oil or Hazardous Materials Sites in your protection areas, refer to Appendix C: Tier Classified Oil and/ or Hazardous Material Sites.

*** THREAT RANKING** - The rankings (high, moderate or low) represent the relative threat of each land use compared to other PSCs. The ranking of a particular PSC is based on a number of factors, including: the type and quantity of chemicals typically used or generated by the PSC; the characteristics of the contaminants (such as toxicity, environmental fate and transport); and the behavior and mobility of the pollutants in soils and groundwater.

- A Right of First Refusal is a legal document that gives the water supplier the first chance to purchase land when it becomes available. Please refer to the example of the Right of First Refusal documents attached in the Appendices.

✓ The Department strongly recommends that the South Deerfield Water Supply District establish a program for planning to acquire ownership or control of property within the areas critical to protecting water quality of the reservoir. If there is no other reasonable method to secure rights and protect critical land areas, the District may wish to consider taking necessary water supply land by eminent domain to protect the sources. This recommendation is not only for the existing sources but also should be considered for future development of sources if they are needed.

2. Residential Land Uses – There are numerous residences located within the Whately Glen and Conway Reservoir watersheds. None of the areas have public sewers to remove wastewater, therefore on-site septic systems are used. If managed improperly, activities associated with residential areas can contribute to drinking water contamination. Common potential sources of contamination include:

- **Septic Systems** – Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the groundwater because septic systems leach to the ground. If septic systems fail or are not properly maintained they can be a potential source of microbial contamination.
- **Household Hazardous Materials** - Hazardous materials may include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. Improper use, storage, and disposal of chemical products used in homes are potential sources of contamination.
- **Heating Oil Storage** - If managed improperly, Underground and Aboveground Storage Tanks (UST and AST) can be potential sources of contamination due to leaks or spills of the fuel oil they store.
- **Stormwater** – Catch basins transport stormwater from roadways and adjacent properties to the ground and streams. As flowing stormwater travels, it picks up debris and contaminants from streets and lawns. Common potential contaminants include lawn chemicals, pet waste, and contaminants from automotive leaks, maintenance, washing, or accidents.

Residential Land Use Recommendations:

✓ Educate residents on best management practices (BMPs) for protecting water supplies. Distribute the fact sheet "Residents Protect Drinking Water" available in Appendix A and on www.mass.gov/dep/brp/dws/protect.htm, which provides BMPs for common residential issues.

✓ Establish efforts of negotiating fee simple purchase, Right of First refusal agreement, conservation restrictions and Memorandum of Understanding for land not currently owned or controlled by the District.

✓ Refer to http://www.state.ma.us/dep/brp/dws/dwspubs.htm and http://www.state.ma.us/dep/consumer/animal.htm#dwqual for additional resources.

3. Transportation Corridors - There are numerous local roads throughout Conway/Whately Glen Reservoir watersheds, including many dirt roads/trails with legal (authorized) and illegal (unauthorized) use. Although most roadways in the watersheds are relatively low-use, even typical roadway maintenance and low use pose a potentially significant source of contamination from accidents and washouts and pesticide application for vegetation control along both the paved and dirt roads, especially in the Zone A. Unmanaged access may result in erosion, vandalism and/or illegal dumping which might cause water quality impairment. Erosion poses a potentially significant threat to water quality in areas that are proximal to feeder streams and the reservoirs, by contributing sediment, various contaminants and pathogens which may result in additional water treatment costs if they continue unchecked. Clandestine dumping is identified as a potentially significant threat to water supplies because roadways can be sites for illegal dumping of hazardous or other harmful wastes. De-icing materials, petroleum chemicals and other debris on roads are picked up by stormwater, washed and discharge into the feeder streams and reservoirs.

The District does not allow public access to District owned watershed land, however, there is evidence of illegal access on trails by ATVs. The District has an approved Surface Water Protection Plan that identified unauthorized access as an issue. The District was awarded a Source Water Protection Grant to identify stormwater related issues and to develop BMPs and a public education program. The District was also funded to have a forest management plan prepared for District owned land. Incorporation of BMPs in forestry operation is requisite to protect water quality.

Transportation Corridor Recommendations:

✓ Conduct regular inspection of watersheds for signs of access, illegal dumping and spills and enforce no trespassing.

- ✓ As part of your currently funded study, evaluate existing conditions throughout the watershed with respect to current legal and illegal use of watershed land. Identify illegal access and destinations and consider ways to address impacts from access. Some water suppliers have had success with posting land, public education, and rerouting trails off of District property and away from sensitive areas. For areas that are severely impacted, more aggressive measures of protection may include increased patrols by District personnel or locals police and impoundment of ATVs for trespassers. Develop a management strategy to eliminate and/or control access. Coordinate management strategies with the host communities.
- ✓ Work with local emergency response teams to ensure that any spills within the protection areas can be effectively contained.
- ✓ Notify officials in the communities in which your watersheds are located of potential USDA funding for mitigation and prevention of runoff pollution through the Environmental Quality Incentives Program (EQIP). The USDA web site is www.rurdev.usda.gov or call the Rural Development Manager at the local office in Hadley at 413-585-1000. Alternatively, review the fact sheet available online at http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf.
- ✓ Consider investigating disposition of any roads, ways and "trails" that may be old county roads or rights-of-way and pursue as appropriate, closing or controlling access.
- ✓ Continue with efforts to identify areas of concern with respect to runoff and erosion, develop and implement BMPs by working with the communities of Conway and Whately.

4. Agricultural Activities/Forestry – The watersheds include a small percentage, approximately 6%, of land for agricultural activities and an unknown percentage for forestry. Pesticides, fertilizers and manure have the potential to contaminate a drinking water source if improperly stored, applied, or disposed. If managed improperly, Underground and Aboveground Storage Tanks (USTs and ASTs) can be potential sources of contamination due to leaks or spills of the fuel oil they store. Frequently, farms have maintenance garages for equipment and storage tanks and forestry requires the use of heavy equipment. Presently, according to the Water District, the commercial operations are small with few or no animals.

Top 5 Reasons to Develop a Local Surface Water Protection Plan

❶ Reduces Risk to Human Health

❷ Cost Effective! Reduces or Eliminates Costs Associated With:

- Increased monitoring and treatment
- Water supply clean up and remediation
- Replacing a water supply
- Purchasing water

❸ Supports municipal bylaws, making them less likely to be challenged

❹ Ensures clean drinking water supplies for future generations

❺ Enhances real estate values – clean drinking water is a local amenity. A community known for its great drinking water in a place people want to live and businesses want to locate.

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Agricultural Activities and Forestry Recommendations:

- ✓ Monitor agricultural lands frequently to ensure current knowledge of activities and practices on farms and open fields. Communicate with land owners as is feasible.
- ✓ Work with commercial farmers in your protection areas to make them aware of your water supply and to encourage the use of assistance provided by the Massachusetts Department of Food and Agriculture and the USDA Natural Resources Conservation Service (NRCS). The NRCS can provide assistance to develop a farm plan to protect water supplies, if they do not already have one. Review the fact sheet available online at http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf and call the local Hadley office of NRCS at 413-585-1000 for assistance.
- ✓ As part of a farm plan, farmers may incorporate an Integrated Pest Management (IPM) approach into their pest management program. IPM is an ecologically-based approach to pest control that links together several related components, including monitoring and scouting, biological controls, mechanical and/or other cultural practices, and pesticide applications. By combining a number of these different methods and practices, satisfactory pest control can be achieved with less impact on the environment.
- ✓ Promote the use of BMPs for fuel oil storage, hazardous material handling,

storage, disposal, and emergency response planning.

- ✓ The USDA has various funding sources for government agencies, non-government organizations and agricultural facilities through programs such as those listed on the USDA web site http://search.sc.egov.usda.gov/. One program in particular, the Environmental Quality Incentives Program (EQIP) may be utilized in a variety of projects from DPW stormwater management to farm nutrient management designed to protect surface and groundwater. Review the fact sheet available online at http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf and call the local office of the NRCS for assistance at 413-585-1000 for assistance. This may be also appropriate for the host communities of Conway and Whately.
- ✓ Work with hobby farmers by supplying them with information about protecting their own wells and the public water supply by encouraging the use of BMPs. Refer to http://www.state.ma.us/dep/brp/dws/dwspubs.htm and http://www.state.ma.us/dep/consumer/animal.htm#dwqual for additional resources.
- ✓ As part of the currently funded project, evaluate past forest management practice and prepare a water supply forest management plan and implement and update the plan as appropriate.

5. Protection Planning – The District has an approved Water Supply Protection Plan, however, plans periodically require updating to correct errors in the original plan, to reflect completed tasks and new conditions. The Department notes that the current plan has an error regarding the acres of land within the watershed protection areas, the percentage of land owned by the District and reports that road salt is not used on any roads within the watershed. An effective overall protection plan will not only include detailed land use, but also includes: coordinated community efforts which identify protection strategies, establishing a timeframe for implementation, and will provide a forum for public education and outreach. The watershed is primarily woodland with the District owning approximately 26%. Good forest management of both District land and private land can beneficially impact water quality and health of the watershed forests.

Protection Planning Recommendations:

- ✓ Establish active watershed protection planning and forest management for water supply protection in a comprehensive watershed plan.
- ✓ Encourage and support efforts by private land owners in active forest management for water supply protection.
- ✓ Consider working with communities and their local officials and boards in the watershed in active watershed protection planning and education efforts.
- ✓ Following the completion of the stormwater study and forest management plan, update the water supply protection plan. The 2000 WSPP did not include the inventory conducted by the District in 1999 of the fuel sources utilized in the watershed. Update that inventory in the next revision of the WSPP.
- ✓ Work with communities within which the watersheds are located to monitor and comment on any proposed development and growth, especially in the Zone A.

Land uses and activities within the watershed that are potential sources of contamination are included in Table 2. Identifying potential sources of contamination is an important initial step toward protecting your drinking water sources. Further local investigation will provide more in-depth information and may identify new land uses and activities that are potential sources of contamination. Once potential sources of contamination are identified, specific recommendations like those below should be used to better protect your water supply.

Section 3: Source Water Protection Conclusions and Recommendations

For More Information

Contact Catherine V. Skiba in DEP's Springfield Regional Office at (413) 755-2119 for more information and assistance on improving current protection measures.

Copies of this report have been provided to the public water supplier, town boards, and the local media.

Current Land Uses and Source Protection:

As with many water supply protection areas, the system's watershed contains potential sources of contamination. However, source protection measures reduce the risk of actual contamination, as illustrated in Figure 2. The water supplier is commended for taking an active role in promoting source protection measures in the Water Supply Protection Areas through:

- Pursuing funding for preparation and implementation of a Water Supply Protection Plan (WSPP), erosion control study and forest management plan,
- Active involvement in inspecting and inventorying land uses in the watershed,
- Detailed knowledge of the watershed.

Source Protection Recommendations:
To better protect the sources for the future:

- ✓ Continue inspection of the Zone A protection areas regularly, and when feasible, remove or manage any non-water supply activities, specifically the maintenance activities and fuel oil storage in Zone A.
- ✓ Continue cooperation and communication with emergency response teams to ensure that they are aware of the boundaries of the watershed for notification of spills or accidents.
- ✓ Through the implementation of the WSPP, provide information to landowners in your protection areas to make them aware of your water supply and to encourage the use of best management practices for residential and recreational uses and other ways they can help you to protect drinking water sources.
- ✓ Update the Watershed Protection Plan following completion of the stormwater inventory and forest management plan.
- ✓ As part of the stormwater evaluation and mitigation plans, identify problem area specifically in the Zone A along roads throughout the watershed. Make every effort to ensure stormwater discharges and run-off is detained prior to release to protection areas. Consider various strategies to detain/slow the flow and retain sediments to keep the runoff out of tributaries and the reservoirs.
- ✓ If local controls do not regulate floor drains, encourage communities to adopt floor drain controls and hazardous waste management strategies.
- ✓ Request that local highway departments inspect, and maintain drainage areas.
- ✓ Once the forest management plan has been approved, implement the plan to establish/maintain a healthy and ideal watershed forest, which will buffer anthropomorphic and natural environmental impacts on water quality and quantity.

Conclusions:
These recommendations are only part of your ongoing local drinking water source protection. Additional source protection recommendations are listed in Table 3, the Key Issues, above and in Appendix A.

- ➢ **Partner with Local Businesses:**
  Since many small businesses and industries use hazardous materials and produce hazardous waste products, it is essential to educate the business community about drinking water protection. Encouraging partnerships among businesses, water suppliers, and communities will enhance successful public drinking water protection practices.

- ➢ **Educate Residents:**
  If managed improperly, household hazardous waste, septic systems, lawn care, and pet waste can all contribute to water supply contamination. Hazardous materials include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Animal waste is also a source of microbial contamination.

- ➢ **Provide Outreach to the Community:**
  Public education and community outreach ensure the long-term protection of drinking water supplies. Awareness often generates community cooperation and support. Residents and business owners are more likely to change their behavior if they know where the source protection areas are located, what types of land uses and activities pose threats, and how their efforts can enhance protection.

- ➢ **Plan for the Future:**
  One of the most effective means of protecting water supplies is local planning, including adoption of local controls to protect land use and regulations related to watershed protection. These controls may include health regulations, discharge prohibitions, general ordinances, and zoning by-laws/ordinances that prohibit or control potential sources of contamination within the protection areas.

- ➢ **Other Funding Sources:**
  Other grants and loans are available through the Drinking Water State Revolving Loan Fund, the Clean Water State Revolving Fund, and other sources. For more information on grants and loans, visit the Bureau of Resource Protection's Municipal Services web site at: http://mass.gov/dep/brp/mf/mfpubs.htm. The USDA also has various funding sources for government agencies, non-government organizations and agricultural facilities through programs such as those listed on the USDA web site http://search.sc.egov.usda.gov/nrcs.asp?qu=eqip&ct=NRCS.

One program in particular, the Environmental Quality Incentives Program (EQIP) may be utilized in a variety of projects from DPW stormwater management to farm nutrient management designed to protect surface and groundwater. Review the fact sheet available online at http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf and call the local office (Hadley 413-585-1000) of the NRCS for assistance.

The Department's Source Protection Grant Program provides funds to assist public water suppliers and their partners in addressing water supply source protection through local projects. Protection recommendations discussed in this document may be eligible for funding under this grant program. If funds are available, each spring DEP posts a new Request for Response for the grant program (RFR). Visit the DEP http://www.state.ma.us/dep/brp/mf/othergrt.htm and http://www.state.ma.us/dep/brp/dws/grants.htm for information about available funds.

DEP staff, informational documents, and resources are available to help you build on this SWAP report as you continue to improve drinking water protection.

The assessment and protection recommendations in this SWAP report are provided as a tool to encourage community discussion, support ongoing source protection efforts, and help establish local drinking water protection priorities. Citizens and community officials should use this SWAP report to encourage discussion of local drinking water protection measures. The water supplier should supplement this SWAP report with local information on potential sources of contamination and land uses. Local information should be maintained and updated periodically to reflect land use changes in the protection areas. Use this information to establish priorities, target inspections, focus education efforts, and to develop a long-term drinking water source protection plan.

Section 4: Appendix

A. Protection Recommendations

Table 3: Current Protection and Recommendations

Protection Measures	Status	Recommendations
Zone A		
Does the Public Water Supplier (PWS) own or control the entire Zone A?	**Partial**	Follow Best Management Practices (BMP's) that focus on good housekeeping, spill prevention, and operational practices to reduce the use and release of hazardous materials. Continue to pursue ownership or control of land critical to protection such as the Zone A.
Is the Zone A posted with "Public Drinking Water Supply" or "No Trespassing" signs?	**YES**	Additional economical signs are available from the Northeast Rural Water Association (802) 660-4988.
Is the Zone A regularly inspected?	**YES**	Continue regular inspections of drinking water protection areas. Increase patrols as appropriate and develop a plan to control access in critical areas.
Are water supply-related activities the only activities within the Zone A?	**YES**	Continue monitoring non-water supply activities in Zone As.
Municipal Controls (Zoning Bylaws, Health Regulations, Ordinances and General Bylaws)		
Do the watershed municipalities have Surface Water Protection Controls that meet 310 CMR 22.20C?	**YES**	Refer to www.state.ma.us/dep/brp/dws/ for model bylaws, health regulations, and current regulations to be sure bylaws are current with regulations.
Do neighboring communities protect the water supply protection areas extending into their communities?	**NO**	Request that the municipalities of Whately and Conway review their bylaws for compliance with 310 CMR 22.20C and request that they adopt them as appropriate. Work with the community to review development within the watershed.
Planning		
Does the PWS have a local surface water supply protection plan?	**YES**	Update the Plan as appropriate to address newly identified threats, inventories that may not been included and to adjust protection priorities as tasks are completed such as the stormwater management plan and the forest management plan and correct errors in the current plan
Does the PWS have a formal "Emergency Response Plan" to deal with spills or other emergencies?	**YES**	Update plan as appropriate by developing a joint emergency response plan with the Fire Department, Board of Health, DPW, and local and state emergency officials. Coordinate emergency response drills with local teams. Complete vulnerability assessment as appropriate for the system.
Does the municipality have a watershed protection committee?	**NO**	Consider establishing a committee that includes representatives from citizens' groups, host communities, and the business community.
Do the Boards of Health conduct inspections of commercial and industrial activities?	**N/A**	For more guidance see "Hazardous Materials Management: A Community's Guide" at www.state.ma.us/dep/brp/dws/files/hazmat.doc. There are no registered generators of hazardous waste in the watershed.
Does the PWS provide watershed protection education?	**YES**	Continue efforts to provide information about BMPs to residents.